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The Bay Institute of San Francisco

"Restoring the Bay's ecosystem ... from the Sierra to the sea."

September 22, 1999

Lester Snow, Executive Director
CALFED Bay-Delta Program
1416 Ninth Street #1155
Sacramento, CA 95814

RE: JUNE 1999 DRAFT PROGRAMMATIC EIS/EIR

Dear Lester,

This letter is submitted as the comments of The Bay Institute of San Francisco on the June 1999 Draft Programmatic Environmental Impact Statement/Environmental Impact Report (DPEIS/R) on a long-term solution to conflicts over management of the San Francisco Bay-Delta estuary's waters. Separate comments regarding the DPEIS/R's compliance with the requirements of the National Environmental Policy and California Environmental Quality Acts (NEPA and CEQA) are being submitted jointly with the Natural Resources Defense Council (NRDC) and other organizations. We also incorporate by reference written comments on the DPEIS/R being submitted by NRDC, Environmental Defense Fund, Save San Francisco Bay Association, The Nature Conservancy, Natural Heritage Institute, Clean Water Action, and Friends of the River.

<u>Summary of recommendations</u>

A. Ecosystem Restoration Program Plan (ERPP)

- Complete the Strategic Plan.

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• Develop a comprehensive environmental water acquisition and management program to achieve ERPP goals and objectives for restoring system hydrology.

• Clarify the relationship of the ERPP to other CALFED Program elements.

• Reorganize the ERPP documents into one coherent document.

B. Water Use Efficiency Program

• Determine appropriate regulatory, contractual, or other consequences if using voluntary market-based incentives fails to achieve CALFED's numeric agricultural water use efficiency targets.

• Use the formula ET - E = T to provide reliable estimates of crop water needs.

• Revise the urban water conservation section of the Water Use Efficiency Program Plan to more accurately reflect potential water savings and economic benefits from Commercial, Industrial and Institutional (CII) efficiency measures.

C. Revised Phase 2 Report

• Apply the adaptive management approach of the ERPP more deeply in all other CALFED Program elements.

• Complete the Water Management Strategy. In particular, articulate competing hypotheses regarding the efficacy of alternative water management measures that can be tested using Stage 1 actions.

• Apply the adaptive management approach to potential major changes in Delta conveyance. Do not commit to constructing a screened diversion on the Sacramento River as a contingency action.

• Apply the adaptive management approach to potential new surface storage facilities. Do not determine a priori the "appropriate" amount of surface storage before Stage 1 actions can be implemented and evaluated.

• Use the proposed Environmental Water Account (EWA), in addition to reducing direct salvage at the South Delta export facilities, to achieve ERPP objectives for flow augmentation, to address indirect impacts of South Delta

export facilities, and to provide environmental benefits additive to existing regulatory or other requirements.

• Distinguish between use of an EWA for environmental purposes and water management measures to enhance water supplies for consumptive use.

D. Implementation plan

• Governance of the EWA should rest within the institutional arrangements for implementation of the ERPP as a whole, including the larger environmental water acquisition and management program.

E. No Action Alternative

• Urban demand has been seriously overestimated in CALFED's analysis.

• Actions to restore flows to the San Joaquin River below Friant Dam will occur in the absence of a CALFED preferred alternative.

A. Ecosystem Restoration Program Plan (ERPP)

The ERPP is without question the most successfully developed element of the CALFED preferred alternative to date. The draft Strategic Plan for Ecosystem Restoration represents a significant first step toward providing a sound scientific and planning framework for implementing an ecosystem-based approach to restoration and management of the Bay-Delta estuary. In addition, Volumes 1 and 2 of the draft ERPP describe a comprehensive suite of potential management actions which may be implemented to achieve the goals and objectives of the Strategic Plan. However, substantial work remains to be done before the ERPP can be considered an adequate basis for achieving CALFED's mission of restoring ecosystem health and improving water management for all beneficial uses.

1. Complete the Strategic Plan. While it is an impressive document, the draft Strategic Plan does not yet constitute a fully developed framework for implementing the ERPP. The completed Strategic Plan should establish:

• a set of clearly articulated, quantitative, and measurable goals, objectives and ecological indicators which taken together constitute the performance metrics for achieving the CALFED mission of restoring ecological health. A major problem of the DPEIS/R is that it substitutes the numeric targets associated with specific ERPP actions contained in Volumes 1 and 2 for the

numeric or quantifiable objectives associated with ecosystem performance that are or should be contained in the Strategic Plan.

- appropriate performance metrics (goals, objectives, indicators); conceptual models and testable hypotheses; and broad restoration strategies, for specifically addressing the Strategic Plan's as yet insufficiently developed goals and objectives for estuarine productivity, system hydrology and non-native invasive species, and for more generally addressing ecological health at the level of habitats, biological communities, and ecological processes.

- clearly articulated priorities for selecting and implementing ERPP actions.

Based on the completed Strategic Plan, CALFED should consequently reassess its current draft Stage 1 ERPP actions and modify them as appropriate.

2. Develop a comprehensive environmental water acquisition and management program to achieve ERPP goals and objectives for restoring system hydrology. This program should determine:

- the highest priorities for augmentation of stream flow and Delta outflow , based on the Strategic Plan's (as yet insufficiently developed) objectives for system hydrology.

- how the environmental water acquisition and management program will be implemented and assured in order to exploit opportunities for and overcome constraints on acquisition of instream water rights, dry year options, and other means to acquire and manage environmental water on a permanent or longterm basis.

- how the environmental water acquisition and management program will be coordinated with the CVPIA water acquisition program, and integrated and/or coordinated with the implementation of a new CALFED Environmental Water Account for reducing the impacts of Delta export operations.

- how the environmental water acquisition and management program will build upon existing instream flow requirements pursuant to the federal and state Clean Water Acts, the Central Valley Project Improvement Act, and the federal and state Endangered Species Acts.

3. Clarify the relationship of the ERPP to other CALFED Program elements. The coordination and institutional relationships of the ERPP to the following CALFED Program elements needs to be more clearly articulated:

- Multi-Species Conservation Strategy
- Environmental Water Account (see detailed comments below)
- Comprehensive Monitoring, Assessment and Research Program (CMARP)
- Levee Management Program Plan
- Water Quality Program Plan
- Watershed Program Plan

4. Reorganize the ERPP into one coherent document. The relationship between the Strategic Plan, Volumes 1 and 2 of the ERPP, and other elements of the CALFED preferred alternative is unclear. First, how the Strategic Plan will be used to guide implementation of the ERPP is unclear. Second, the terminology needs to be reviewed and standardized to avoid internal inconsistencies.

We recommend that the ERPP be reorganized into one document with the following table of contents:

- Problem description: the historical and altered ecosystem
- Performance metrics: goals, objectives and ecological indicators
- Adaptive management: conceptual models and overall restoration strategies
- Adaptive management: monitoring, performance assessment, and resultant changes to the implementation strategy
- Implementation strategy: stage 1 actions
- Implementation strategy: longer term actions
- Implementation strategy: governance and local implementation efforts
- Relationship to other CALFED programs

See Attachments A and B for further comments on the ERPP.

B. Water Use Efficiency Program Plan

1. The Water Use Efficiency Program Plan should determine appropriate regulatory, contractual, or other consequences if using voluntary market-based incentives to implement the Agricultural Water Use Efficiency element fails to achieve CALFED's performance metrics for agricultural water use efficiency, and the regulatory or other arena for pursuing these consequences. These consequences should be described in terms of compliance with biological opinions under the federal and state Endangered Species Acts, Regional Water Quality Control Board basin plans, conditions of enforceable contracts between a CALFED implementing/funding agency and a water using entity, and other regulatory and legal requirements.

2. Reliable evaporation estimates are currently available as an analytical tool for evaluating the CALFED preferred alternative. We support CALFED's decision to implement the Agricultural Water Use Efficiency expert panel's recommendation to estimate evaporation and transpiration separately when assessing the potential to compute crop water needs and to reduce irrecoverable losses, but do not agree that current methods may prevent confident evaporation estimates. Simply using the formula ET - E = T is accurate and defensible. See Attachment C for a more detailed discussion regarding computation of crop water needs.

3. The urban water conservation section of the Water Use Efficiency Program Plan significantly underestimates potential water savings and economic benefits from Commercial, Industrial and Institutional (CII) efficiency measures. This section should be revised to reflect that:

- Reductions from CII efficiency programs are much larger than assumed in the draft.

- Disaggregation of regional CII efficiency programs will reveal much larger reductions than estimated in the draft.

- Unit costs of CII efficiency measures are much smaller (and often generate net savings) than for residential efficiency or urban wastewater reclamation.

- Stage 1 actions must include balancing funding priorities by comparing the cost-effectiveness of all the different water efficiency programs.

- Stage 1 actions should include funding for local CII demonstration projects.

- Policy evaluations in Stage 1 actions should include specific CII components.

See Attachment E for more detailed comments.

C. Revised Phase 2 Report

1. Adaptive management is not adequately embedded in most CALFED Program elements. The Revised Phase 2 Report contains an excellent general description of adaptive management (pp. 22-3) and a specific description of its role in the design and implementation of the ERPP (pp. 152-4). What is lacking in the CALFED Program Elements other than the ERPP and the Water Use Efficiency

Program are strategic plans for each element incorporating the fundamentals of adaptive management (clear goals; conceptual models; incremental implementation; performance assessment; phased decision-making) and especially the articulation of competing hypotheses regarding the efficacy and feasibility of alternative management measures. These shortcomings are particularly important for the development of a Water Management Strategy.

2. Complete the Water Management Strategy prior to finalizing Stage 1 actions to achieve water supply reliability. In particular, articulate competing hypotheses regarding alternative water management measures that can be tested using Stage 1 actions. Where significant analytical uncertainties or stakeholder disagreements exist regarding the efficacy or feasibility of alternative water management measures, testable hypotheses should be articulated and used as the basis for designing Stage 1 actions to generate useful data to guide future implementation decisions. Stage 1 actions should include incremental measures which can test hypotheses and exclude major infrastructure projects which involve large-scale risk and massive investment, with the possibility of creating major stranded assets.

See Attachment D for more detailed comments regarding alternative assumptions to the DPEIS/R that should be tested in implementing a Water Management Strategy.

3. Apply the adaptive management approach to potential major changes in Delta conveyance. In other program elements, failure to achieve program goals does not automatically trigger implementation of pre-selected management measures. Rather, CALFED proposes to use adaptive management to evaluate the efficacy of Stage 1 actions toward meeting CALFED's program goals, and then select the most appropriate alternative. For instance, CALFED has correctly concluded that failure over time to achieve water quality or other goals should not automatically trigger construction of an isolated conveyance facility but should result in reevaluation of the full range of alternative options. Inexplicably, CALFED's decision in the DPEIS/R to construct a screened diversion of up to 4,000 cfs on the Sacramento River if water quality goals are not being met violates this fundamental concept of adaptive management. This decision also appears to violate the requirements of NEPA and CEQA that a full range of alternatives be evaluated before a preferred alternative is selected. Furthermore, the CALFED Program has neither demonstrated that the screened diversion is necessary to meet its water quality goals nor that fishery impacts of a large-scale diversion can be avoided or adequately mitigated. For these reasons, all linkages between CALFED's Water Quality Program Plan goals, also called drinking water quality goals or targets, and construction of major new conveyance facilities or other infrastructure, should be removed. See Attachment F for a more detailed critique of the screened diversion by Congressman George Miller.

CALFED should also reevaluate its drinking water quality goal for bromide. The public health concern is not with bromide per se, but with post-disinfection brominated byproducts. The nature and amount of post -disinfection brominated byproducts depend entirely upon the types of treatment processes utilized at each water treatment facility. Implementation of advanced water treatment technologies such as ultraviolet irradiation may achieve goals for public health protection without having to achieve bromide reduction objectives (and potentially at much less cost).

In assessing whether additional modifications in conveyance and/or additional water management actions are necessary to achieve CALFED's fishery-related objectives, the following issues should be considered:

- Entrainment/salvage/predation at Tracy, Skinner, and Clifton Court Forebay (including results from new test screens), and effect on prevalence of life stages of pelagic eggs and larvae -
  a) Compare salvage/survival numbers using different screens, salvage, transport, release, and operational strategies.
  b) Quantify/compare larval densities in diverted water; water in presumed spawning areas; and water in downstream areas, to determine what proportion of total population (or what proportion of an annual spawn effort of a species, e.g., delta smelt) is lost to diversion.
  c) Compare nutrient levels and plankton densities in South Delta vs Sacramento River at and above diversion points to assess diversion impacts on estuarine productivity and food web relationships.

- Delta hydraulics -
  a) Increased occurrence of reverse flows is predicted with continued operation of South Delta facilities. Reverse flows can now be measured directly with the USGS velocity meters.
  b) Transport/migration flows for early and young life stages of fish (e.g. delta smelt, salmonids) and attraction flows for upmigrating salmonids can be measured quantitatively (directly as net flow measurements and indirectly as fish distributions in time and space) both near the export facilities and throughout the Delta.
  c). South Delta barriers are integral to operation of the export facilities. Barrier impacts on fishes, Delta hydraulics, and water quality should be quantitatively evaluated using some of the methods discussed above.

4. Apply the adaptive management approach to decisions regarding potential major surface storage facilities. CALFED's discussion of surface storage in the Revised Phase 2 Report does not adequately acknowledge major uncertainties regarding the need for, efficacy and implementability of new surface storage.

• Need: the justification for additional storage is based in part on assumptions regarding current and future demand which have been the subject of serious, continuing criticism. Questionable demand assumptions should not drive questionable implementation decisions. For instance, CALFED is using the 1995 water demand from Bulletin 160-98, which overstates urban demand by 800,000 acre-feet to 1.2 million acre-feet per year.

• Environmental Impacts: the Revised Phase 2 report seriously understates the potential for significant adverse impacts from construction and operation of additional surface storage facilities on riverine function and environmental conditions, quality and quantity of seasonally or tidally inundated habitat, and other ecological values. For instance, using new reservoirs to capture and divert more water at different times could adversely alter temperatures. In most rivers, temperatures are already borderline for most salmonids; further temperature increases (predicted in the DPEIS/R as a possible adverse impact) could impair recovery of endangered salmon runs. Furthermore, changes in seasonal flows from diversion to new storage could create habitat conditions (low flows, high salinities and temperatures) that favor non-native invasive species. Decreased flows and sediment loading could also undermine CALFED's efforts to create sustainable floodplain and tidal marsh habitat in areas downstream of diversion points for new storage.

• Efficacy: it is probably not possible to conclusively asses the relative ability of surface storage versus other water management measures to achieve water supply reliability objectives at this time. However, since these other measures -- including increased conservation and recycling; facilitation of water transfers; increased groundwater storage and conjunctive use programs; changes in pricing of water; and changes in flood reservations from reservoir reoperation and floodplain/floodway expansion -- are all foundational elements of any long-term solution, it is appropriate to evaluate the ability of these measures to achieve water supply reliability objectives prior to authorizing additional water supply infrastructure.

• Implementability: the cost-effectiveness of new surface storage is in serious doubt. There is little support for general public financing of new water supply facilities, and little interest among the potential water user beneficiaries in paying for such facilities. Ecosystem restoration funds cannot be relied upon, since market acquisitions, groundwater storage, and other mechanisms provide alternative sources of water for environmental purposes.

Additional surface storage and other changes to the water supply infrastructure should remain among the options to be considered by CALFED if water supply

reliability objectives are not being achieved over the next 10 - 15 years. However, pre-authorizing storage in the Final PEIS/R or early in the implementation of the Program would violate one of the most fundamental premises of adaptive management: that the manager should learn from experience. By determining a priori the appropriate mix of surface and groundwater storage, CALFED would be precluded from learning from its experience implementing the Water Management Strategy, in order to improve it, and from considering other significant options, such as desalination, emerging conservation technologies, and larger-scale land retirement, for which new information may also become available.

5. In developing the Environmental Water Account (EWA), CALFED should consider using it, in addition to reducing direct salvage at the South Delta export facilities, to achieve ERPP objectives for flow augmentation, to address indirect impacts of South Delta export facilities, and to provide environmental benefits additive to existing regulatory or other requirements. CALFED should also clearly distinguish between use of an EWA for environmental purposes and water management measures to enhance water supplies for consumptive use.

- CALFED needs an EWA that is much broader in scope than currently envisioned. What CALFED is calling the EWA should more accurately be described as a "Delta export management subaccount" of a larger EWA that needs to be evaluated and ultimately implemented. To date, the EWA gaming process has only contemplated environmental water acquisitions and Delta facilities reoperation as a way of providing assets to the EWA for export reduction. In contrast, the CALFED Ecosystem Restoration Program Plan has identified a set of objectives for augmenting Central Valley instream flows and Delta outflows which an EWA should also be working to achieve. Failing to consider this broader function of an EWA leads to faulty or incomplete assumptions regarding a number of factors, including the budget necessary for environmental water acquisition and the availability of Delta inflow for export in relation to attainment of ERP flow objectives.

  Natural flow regime - The ERPP identifies a wide range of flow needs for the rivers, tributaries, and Bay-Delta that would improve existing flow regimes in terms of replicating at least the natural flow patterns. Most of the prescriptions are for spring pulse flows in dry and normal years, which water development has eliminated. These recommendations overlap slightly with recommendations of the Anadromous Fish Restoration Program (AFRP). The specifics of the ERP and the AFRP recommendations were not addressed during the EWA development process.

The value of pulse flows in winter and spring to rivers, Delta, and Bay - The EWA development process has assumed that water in excess of currently regulatory minima is available for the taking with the expanded storage, conveyance, and pumping capacities proposed; pulse flows have therefore been captured with the expanded capacity at Banks for water supply or environmental purposes.

X2 relationships - The EWA development process did not specifically use EWA resources to specifically move X2 downstream. Current data suggests that declines in Delta fisheries and productivity are related to rapid movement of X2 upstream into the Delta when flows come under control of the projects in the spring of dry, below normal, above normal, and some wet flow years, and that sharp changes in X2 and QWEST have demonstrable effects on fish salvage at the South Delta facilities. If EWA resources were used to limit sudden changes in Delta hydrodynamics, then potential impacts of continuing to pump from the South Delta could be minimized.

Importance of the Delta for salmon - The EWA development process focused primarily on salvage of spring smolts of predominantly San Joaquin River basin origin, and did not exploit opportunities to improve salmonid conditions. Current data suggests that wild salmon production is related to (1) good transport flows to facilitate movement from spawning areas to the estuary, and (2) maintaining good conditions in the estuary. Allowing opportunities for San Joaquin basin salmon fry to reach the Bay during the January-March period is likely the essential element of improving wild salmon populations from these rivers. Likewise, the first flows of the water year are likely essential to the survival of winter-run salmon from the Sacramento River. Late fall and early winter outflows to the Bay have been significantly altered in many years, possibly to the detriment of winter-run survival. Winter flows carry salmon fry to the Delta, Suisun Bay, San Pablo Bay, and Central Bay, which coincides with strong salmon escapement in subsequent years.

• The Revised Phase 2 Report confuses the EWA with potential measures to benefit Delta exporters. Evaluation of the EWA should not occur in isolation from evaluation of potential CALFED measures to benefit Delta exporters. However, the EWA does not in and of itself require that additional conveyance or storage capacity be allocated to other uses to a particular degree or at all, nor should evaluation of the EWA be limited to one set of assumptions regarding the allocation of such excess capacity. This problem is particularly reflected in the assumption of the gaming process to date that all

excess conveyance capacity is allocated to Delta exporters; the resultant adverse environmental impacts in wet years has led to the erroneous finding that wet year expenditures are a high priority for an EWA. CALFED needs to evaluate differing assumptions about the allocation of benefits from potential water management measures. CALFED also needs to clearly identify where the purpose of proposed operational changes and use of excess capacity is to benefit Delta exporters independent of the utility or operation of an EWA.

• The gaming process has focused on the use of a EWA to reduce direct fish salvage at the South Delta facilities. While this is absolutely critical, CALFED also needs to do more to evaluate how an EWA might be used to reduce the indirect effects of Delta export operations on fish survival, and to respond to changing conditions before fish salvage and indirect effects occur.

Diversion effects of pumps - The ERP Strategic Plan discusses the significance of entrainment losses in the South Delta for populations of important fish species, and effects on changes in internal Delta hydrodynamics which cause fish to move toward the South Delta or do not allow fish to move from the South Delta. Rather than focus on population effects, the EWA development process focused on means of reducing salvage and entrainment at the South Delta facilities. The EWA development process needs to dentify the distribution of the populations of key life stages of smelt, salmon, and splittail in the Bay, Delta, and lower rivers; relate those distributions to Delta hydrodynamics and seasonal life history characteristics of the species; and identify mechanisms that relate to changes in distribution, particularly changes that affect exposure to the South Delta facilities.

Indirect effects of South Delta pumping. Does pumping create greater impacts to habitats and species by changing hydraulics and source water composition in the Bay and Delta? Changes in salinity distributions from pumping are readily shown. High inflow/low outflow/high export conditions have measurable effects on Delta habitat that can be measured and described.

Use of expanded Banks capacity - The expanded pumping capacity of Banks can be used when there appears to little risk based on fish distribution and salvage. The basic approach used in the EWA development process was to expand pumping from historical low levels to high levels as long fish densities are low. However, high pumping rates (above 10 kcfs) lead to the highest salvage rates and potentially the largest indirect effects of pumping. High pumping ratea may draw fish into the south Delta where they would be much more vulnerable to entrainment

or salvage and losses to indirect effects such as poor habitat, predators, and other stresses (e.g., poor water quality, agricultural diversions).

• CALFED should clarify how the EWA will build upon existing instream flow, Delta outflow and Delta export requirements pursuant to the federal and state Clean Water Acts, the Central Valley Project Improvement Act, and the federal and state Endangered Species Acts. The use of an EWA should be additive to these baseline environmental protections. This position is consistent with use of the EWA to exercise the flexibility provision of the export/inflow ratio, provided the EWA supplies an equivalent amount of water for environmental purposes.

D. Implementation Plan

1. Governance of the EWA should rest within the institutional arrangements for implementation of the ERPP as a whole (preferably an independent ERPP entity), including the larger environmental water acquisition and management program.

• The EWA and the ERPP water acquisition program share common goals and objectives, and should be implemented by the same ecosystem manager. In addition to reducing South Delta export impacts, the EWA's purposes should include achieving ERPP's objectives for system hydrology.

• Management of the EWA and the ERPP water acquisition program will profoundly affect each other and should be managed by the same ecosystem manager. Implementation of the EWA measures should exploit synergies with environmental water acquisitions to augment stream flow upstream of the Delta or to augment outflow to San Francisco Bay.

E. No Action Alternative

1. CALFED is using the 1995 water demand from Bulletin 160-98, which according to an analysis by the California Research Bureau overstates urban demand by 800,000 acre-feet to 1.2 million acre-feet per year.

2. The no-action alternative should recognize that, even in the absence of a CALFED preferred alternative, actions to restore flows in the San Joaquin River below Friant Dam to some as yet unspecified degree will occur as a result of litigation in federal court and potentially from associated settlement negotiations.

Attachments to this comment letter

A: The Bay Institute, Metropolitan Water District of Southern California, Natural Heritage Institute, and The Nature Conservancy. January 25, 1999. Letter to Lester Snow regarding Ecosystem Restoration Program Plan.

B: The Bay Institute. January 28, 1999. Draft outline of a 1999 workplan for completing CALFED ecosystem restoration planning process.

C: The Bay Institute. Undated. Evaporation or Transpiration - What do crops really need?

D: Environmental Water Caucus. November 5, 1998. Blueprint for an environmentally and economically sound CALFED water supply reliability program.

E: Rosenblum Environmental Engineering. September 2, 1999. Comments on the commercial/industrial element in CALFED's water use efficiency program plan.

F: Congressman George Miller, D-Martinez. August 26, 1999. Letter to Lester Snow regarding pilot screened diversion of up to 4,000 cfs.

Thank you for your consideration of these comments. Please contact me at (415) 721-7680 if I can provide any additional information.

Sincerely,

Gary Bobker
Program Director